States. I ask my colleagues in this Congress, when the Presidents of Central American countries come around to our offices, as they have, and ask us to vote for the Central American Free Trade Agreement, understand, they may support it for whatever reasons, but the people of their countries, in large numbers, do not.

A couple of nights ago, after the Chamber of Commerce tour of America that the six Presidents took, the Chamber of Commerce hosted a reception for the visiting dignitaries, rewarding them, thanking them for their lobbying efforts this week. You can imagine this very plush room at the Chamber of Commerce, in its beautiful structure in downtown Washington, where the chamber has its very nice offices.

You can imagine the leaders, the CEOs, of the most powerful and largest corporations in our country were raising toasts, thanking the six Central American and Dominican Republic Presidents for their campaigning for this issue. Then you can see the six Presidents raising a toast to the Presidents and CEOs of the largest companies in America, thanking them for their support.

It just made you wonder were the CEOs or were these Presidents thinking of the millions of workers and hundreds of thousands of workers in each of these countries, millions of workers in the United States, who are opposed to this agreement and who knew that this agreement would bring more problems for America.

Did they think about the small businesses in Ohio and Michigan that do not want another failed trade agreement? Did they think about the small stores in Managua and Santo Domingo and in San Juan that would go out of business and that would be pushed out of business because of these trade agreements? Did they think about the family farms in North Carolina or the coffee farmers in Costa Rica or the highlands of Nicaragua? Did they think about the sugar farmers in Minnesota, in eastern Oregon and in Idaho and in Minnesota and Louisiana? Or did they think about the sugar cane workers in Central American? My guess is they did not.

When I think about these trade issues, and I again go back to this chart as I am about to close, I go back to this chart which shows the relative income of each of these Central American countries, and when you think about where we want to go with our trade agreements and what has happened to our trade agreements, we have seen so much pain on each side.

We have seen pain in O'Leary, Ohio, near where I live, a town of about 50,000, industrial town which has had certainly its tough times. When York Manufacturing shut down its plant and moved much of its production to Mexico, think about those families; the unemployment in that community; people losing their jobs; kids not able to go to college; people, their homes are foreclosed on; what happened to the school district, which lost a big chunk of money; what happened to police and fire protection in that city because they lost so much tax revenue. Then you think about what happens to workers in the developing world in these countries when these trade agreements inflict the damage that they do on them, these workers, the family I met in Mexico that worked at General Electric, that could barely make a living and what happened in their lives and the pain they felt.

You think about the damage, both in the rich world, our world, the United States, the rich countries, and you think of the poor countries and the damage there. Instead, we could pass not this Central American Free Trade Agreement. When the time runs out, when this clock is down, when the deadline passes and CAFTA is dead, it is time to pass a new Central American Free Trade Agreement, negotiate a new one that will really lift workers up, because trade agreements work when the world's poorest workers, the workers for Nike in China, the workers for Motorola in Malaysia, the workers for Disney in Costa Rica, the workers at the auto plants in Mexico, when the world's poorest workers can buy American products, rather than just make them, then we will know, Mr. Speaker, that our trade policies are finally succeeding.

ENERGY

The SPEAKER pro tempore (Mr. DENT). Under the Speaker's announced policy of January 4, 2005, the gentleman from Maryland (Mr. BARTLETT) is recognized for 60 minutes.

Mr. BARTLETT of Maryland. Mr. Speaker, we are here this afternoon to build on a discussion that was started last evening when five of us were here on the floor to talk about the problem of energy in general and about oil and peak oil in particular.

I would like to start with a chart that shows some curves that will lead us to this one. Here, we have a 2 percent growth curve, and what this is is the rate at which we are increasing our demand for oil. You will see that it is exponential. It is not a straight line. It goes out and up, and the further you go, the steeper it gets. I wanted to talk for just a moment about these exponential curves because I think a lot of people do not understand the exponential function.

There is a very interesting story about the person who a very long time ago invented the game of chess, and the monarch of the kingdom was so impressed with that contribution that he told the inventor that any reasonable thing that you ask, I will give you. The inventor said, I am a simple man, with simple needs, and if you will simply take my chess board and put a grain of wheat on the first square and 2 grains of wheat on the second square and 4 grains of wheat on the third square and 8 grains of wheat on the fourth square and just continue, continue doubling the number of grains you put on each square until you have gone through all the squares of the chess board, that will be reward enough for what I have done. The king thought he had gotten off lightly; geez, that is easy.

He could not do that, of course, because if you do that, go to the 64th power, that would represent all the wheat that is grown in all the world in 4 years of harvest, I understand, and you notice that is the exponential function.

We see here just a 2 percent growth curve, and many people think of 2 percent growth as a straight line. That is only 2 percent for the first year, but then if it is going to 2 percent for the second year, it is not going to be 2 percent of what existed at the end of that year. So you are kind of getting interest on interest which is what compound interest is, and I think many people have a little appreciation of compound interest.

This is a 4 percent growth curve. It quadruples in 35 years. This is a 5 percent growth curve, and China now is on a 10 percent growth curve. That is this curve. In 7 years, if they continue on this curve, their economy will double, and their use of oil will double if it follows the economy. There is not much way to keep it from following the economy. In 14 years, they will be using four times as much oil, and in just 21 years, they will be using eight times as much oil.

The next chart kind of puts the thing in perspective as far as our country is concerned. We have 2 percent of the world's oil reserves, and we use 25 percent of the world's oil, and we import about two-thirds of what we use. That is up, by the way, from the Arab oil embargo where we imported just about a third of what we use.

Two other figures are of interest. One is that we represent less than 5 percent of the world's population. We are about one person in 22 in the world, and this one person is so fortunate that we get to have 25 percent of all the good things in the world, a subject for another discussion, but I wonder, Mr. Speaker, if you have asked yourself the question, how come that is true; what is so unique about this country and our culture that this one person in 22 has a fourth of all the good things in the world? Perhaps we will come here to the floor another day to talk about that because I think there are some real lessons to learn. If you understood how we got here, then we might understand what we need to do to stay here, but that is not the subject of tonight's discussion.

With only 2 percent of the world's oil reserves, we produce 8 percent of the world's oil. What that means, of course, is that we are really good at pumping oil. We know how to get oil out of the ground better than almost anybody in the world. As a matter of

fact, we are so good at that, that the Chinese have come here. They may still be here. They were here a few days ago, and they were coming to try and see how we do it, because we are really good at getting oil out of the ground.

What that means, of course, is for the moment we are better off because with 2 percent of the world's oil reserves, we are getting 8 percent of the world's oil. So we are really maximizing the opportunities we have from the oil that is available to us.

The next chart will show us one of the consequences of this, and I have to go back now about 6 decades to put what we are talking about in perspective.

There was apparently lots of oil available in the world at that time. We were awash in oil, and gasoline was very cheap. I remember buying it at 6 gallons for a dollar. You could not do that today, no matter what the price of crude oil was, because I think there is $0.48 tax per gallon.

□ 1700

And then, obviously, there was a much lesser tax per gallon, because I remember buying gas, 6 gallons for a dollar.

There was during the 1940s and 1950s, a scientist working for Shell Oil Company named M. King Hubbert. He became quite an icon in that world because he made a prediction in 1956 that the United States would peak in its oil production; that we would reach a maximum capacity for pumping oil in this country in about 1970. He made that prediction 14 years before the date at which he said it would happen.

He made that prediction because, as a student of this technology, he had watched the exploitation and the depletion of individual oil fields. He noticed that for every oil field the rate of production increased and increased until after it reached a peak, and then after it reached a peak it was more difficult to get, and so it fell down the other side of the slope, and it always followed a bell curve.

Here we have a bell curve. As a matter of fact, that is the bell curve, the green there. That smooth green line is a bell curve that was predicted by M. King Hubbert. The more ragged green line are the actual data points where they fell on that curve, remarkably close to his predicted curve.

If we look at the next graph, and by the way, before we look at that one, the red one here shows Russia. There are charts for a lot of countries, because a number of countries have now peaked in their oil production.

In this next one, the red one here shows Russia, really the Soviet Union, and they kind of fell apart. And notice that the actual production did not follow the predicted curve. They now are capitalizing on that and they are having a second little peak here, but it is still falling off.

Notice the blue lines here. We will talk about that in just a moment with the next chart here, because what the next chart does is to show where we got our oil from and where we were getting it from when M. King Hubbert made his prediction. When he made that prediction back here in 1956, we were getting a tiny bit of natural gas liquids, and we were getting about half of our oil from Texas and the other half from the rest of the United States.

He predicted that by 1970 that we would peak. And he did that because he rationalized that if you took each one of these little oil fields that was going to follow a bell curve, and if you added up all the little bell curves, you would get one big bell curve for the whole country. And so with some confidence he predicted, by estimating the additional oil that we would find, he predicted when we ought to peak. As a matter of fact, we did peak in 1970.

When we were falling down the other side of Hubbert's Peak, we discovered oil in Prudhoe Bay in Alaska; and there was a lot of oil there. There was hopes that this would solve our oil problem. You see what it did? There is just a little blip in the slope down the other side of Hubbert's Peak. That, by the way, represents about 25 percent of our present production of oil. That is tailing off, as you see, because we are now down pumping relatively the last oil out of Prudhoe Bay.

I am sure, Mr. Speaker, that you can remember all of the hullabaloo, I guess is the best way to say it, about the enormous oil finds in the Gulf of Mexico. We were going to be home free. It was energy and oil for the foreseeable future. That is the little yellow segment here. That is how much it amounted to.

The next chart shows the discovery of oil. We have been talking so far about the production of oil, and the reality is that the world found its oil many years before it produced oil. I hope there is a whole lot of oil out there that we have not found; but by the time we finish this evening, I think you will agree that for our present situation and for the next few years, it really is not going to be of much moment whether we find a whole lot more or not. I hope we do. I do not think the industry expects that we will, because they are now awash in cash. And you may or may not know, they are not spending a lot of that money on prospecting. They believe that they have found much of the oil that is out there to find.

This chart reflects worldwide. Our peak occurred well before this, but worldwide the peak discoveries occurred back here in the mid-1960s, and now we are reaching the peak production about 40 years later. That is roughly what it was in our country, about 30 or 40 years later after we had the maximum discoveries, then you have the maximum exploitation and the highest pumping of that oil.

We were already 10 years down the slope of the other side of Hubbert's Peak when Ronald Reagan came to office. And he and his administration understood that we were becoming every day more dependent on foreign oil, and so they had a solution to the problem. It turned out to be not the right solution, but at least they tried to do something. You may remember those days, and the philosophy was that the marketplace solves problems. And with unlimited resources, the marketplace is great at solving problems. So they theorized if we just gave our oil industry an excuse, an incentive to drill more wells, that they would go out and drill more wells and they would find more oil. So we put in place a number of incentives to go out and drill more wells and, boy, it worked.

This was the rate at which we were drilling wells. And then after Reagan came in, notice how it shot up. Now, the green here represents the excess we had compared to what we were pumping. The red represents a deficit that we are now using more than we pump. And notice that the increased drilling coincided with the beginning of a surge in red, which continued more and more. And notice how drilling has fallen off.

With us having only 2 percent of the reserves and using 25 percent of the world's oil and importing two-thirds of what we use, and with oil at $50 a barrel, you would think that with the big profits the oil companies have that they would now be drilling a lot of wells. They are not drilling a lot of wells. Could that be because they have some reasonable confidence that they have probably found most of the oil that is out there to find?

The next chart shows us something very interesting. We are not the only country in the world that uses oil. China, of course, is a big user of oil. As a matter of fact, they are now the number two importer of oil in the world. I think they are the number two user of oil in the world. They just surpassed Japan, with 1.3 billion people that have some qualities that you can admire, because they are the qualities, at least some of the reason, that America is the great country that it is. We had a great work ethic. We had a great respect for education. And we have been the most innovative society in the world.

But now the Chinese are rivaling us and maybe surpassing us in the work ethic. And if you look at our schools, particularly our technical schools in science math and engineering, you might conclude they had a little more respect for technical education than we have, because not only have they filled the schools up in their country, and they have some pretty good schools there now, but they are also about half the students in our country. Their economy has been growing at 10 percent a year. Last year, they increased their demands for imported oil by about 25 percent. I hope that does not continue, because if it does, the world is going to have an oil crunch or crisis a little sooner than it might otherwise.

This map of the world, and by the way there is an interesting depiction here, and that is the green, which is Russia. By the way, this should be colored green over here too, right next to Alaska. Russia spans 11 time zones. They go almost halfway around the world. And they have got a lot of oil over in what is called the Far East of Russia, over here near the Sakhalin Islands. And China, this symbol here represents China's negotiating with Russia, and they may very well build a pipeline from Russia's Far East down to China, maybe on down to the Korean Peninsula, because the Russians have the oil and the Chinese need the oil.

Not only are they working there to get oil, but they are certainly several places in the Middle East. They are in Africa. They have contracts in these areas. And in many areas they are buying access to facilities to make sure that they will have more reasonable access to oil in the future. They are in our back yard. They are in Colombia; they are in Venezuela.

By the way, they are talking about building a canal across the Isthmus of Panama so they can move oil from one side to the other to more quickly get it to China.

They are in Brazil. They are in Argentina. They are scouring the world for oil. As a matter of fact, they have locked up the oil from the oil sands in Alaska, oil sands that I suspect we are counting on, because Canada is a big exporter to the United States. But they now have, I understand, a 40-year contract, locking up at least some of the production of the tar sands. And that production may well drop off so that the oil available to them through this contract may be a major part of the oil produced in Canada.

This is a reality that we must deal with. Although we are now big, using a fourth of the oil in the world, China, with 1.3 billion people, with an economy growing at 10 percent a year, will double in 7 years. Our economy has been growing more or less 2 percent a year. We are pretty good at efficiency, so our use of oil has only been growing at 2 percent. Even if our economy grows a bit more than that, this 2 percent growth means it will take 35 years before we double our use of oil. But China, at their 10 percent, will only go 7 years before they double the use of their oil.

So when we look to the future, we will have to recognize that there will be a lot more people out there needing oil and looking for oil than just the United States.

The next graph shows us something pretty interesting. It goes back through history, and we go way back. Here we go back to the 1600s and the 1700s, and what this chart shows is the development of the Industrial Age. The first energy source that we really learned how to use was fire and wood, and that is the brown here. You see that we developed an economy with wood. This shows how many quadrillion Btus were produced by wood.

By the way, the Industrial Revolution almost floundered because we were stuck on wood for too long. England was largely denuded of trees to fuel their furnaces for making steel, and we largely denuded New England. I understand there are more forests in the New England States, New Hampshire today, than there was at the Revolutionary War, because those trees had been cut and hauled to England for charcoal to make steel.

But then we found coal, and look what happened to the economy, because coal has a higher energy density than wood. So the economy grew to five times the size in terms of quadrillion Btus.

Then we discovered a fuel source, an energy source even more convenient than coal, and that was oil, and that is the red line here. That is oil and gas, because they frequently occur together. Sometimes it is only gas if you are very deep, and the heat of the Earth and time so that most of the oil has now kind of been converted into gas. But many of the other reservoirs have oil and the gas trapped above it, with a dome of rock over it so it holds it. Otherwise, the gas would have leaked out and the oil would have been of poorer quality as a result of that.

□ 1715

You may have seen pictures of many oil wells in the past that had a big flame burning there at the well. That is because of the natural gas that occurred with the oil, and it was just a product that they did not have any use for because you cannot put gas in a truck and haul it and so they just burned it off at the wellhead. Now, of course, we do not do that and gas is becoming a very precious commodity.

Notice that when we were using a lot of wood, we were using very little coal. When you looked at the energy use across our country in those days, very little coal used and a lot of wood, but soon there was a lot of coal and less wood because coal was more efficient. And look how small oil was here when coal was a big, big factor. But then when we started using oil and found out how superior it was for many uses as compared to coal; why, the use really shot up.

What is there on the horizon today that could take the place of oil when we have run down the other side and as we are running down the other side of Hubbert's peak? The lower curve here, and we have here separated out the petroleum and the natural gas so you do not have the big peak here. If you added these two together, it would be the red line there. We have many fewer years, just this little segment in here. But notice at the bottom those things that we might look to for the future. Nuclear, getting 20 percent of our electricity now, it is not a big percentage of our total energy, but it is meaningful. And solar and wind, they are very little down here but these are the kinds of things that we need to look to for the future.

I would like to go back to the first chart that is on the board here now and just spend a couple of minutes looking at this because this kind of tells us where we are or where we are shortly going to be in the future. This is Hubbert's Peak. By the way, we can make this peak very steep. By compressing the abscissa and expanding the ordinate, you will make it a very steep peak. So whether it is steep or spread out just depends upon the scale you use. Two percent growth. Notice that, at some point, as we near the peak that the 2 percent growth, and that is the oil you would like to use. The blue down here is the oil that is available. Up until this time, all the oil we needed to use has been there. That is pretty much where we are today; although there may be a bit less than we would like to use because oil is not $20 a barrel, it is $50 a barrel. That may reflect an already recognized shortage or potential shortage.

As time goes on, you see the enormous variance between the oil that we would like to use and the oil that is available to use. I would like to make a point that, if we use all the oil for our ordinary economic functions that is available to use, that we are dooming ourselves to a very rough ride in the future, because we will need a bunch of energy, much of it from oil, to develop the alternatives that will be essential as we slide down the other side of Hubbert's Peak. So, at this point in time, we cannot use that much oil when we would like to be using that much. We can only maybe use that much oil, so we are going to be in a position, unless we can reduce our use of oil to about half of what it is now, we are not going to have the energy available to invest in the alternatives so that will ultimately free ourselves from this dependence on a diminishing resource.

From our perspective in this country, our dependence on a resource that is largely in foreign lands and much of that, a great deal of that, as the President himself said, is in countries that do not even like us and that may be pretty terrible in expressing their attitude toward us.

There are many observers of this phenomenon of peak oil that do not believe that we as a country and we as a society have either the wit or the will to do the things that we really need to do to avoid a train wreck in the future. I would just like to read from a few of those. Some of these names you will recognize because some of them are very prominent names. The first is from a Matt Savinar who wrote a treatise, which I have here and you can find it, Life After the Oil Crash. Just do a Google search and go to Peak Oil and you will find Matt Savinar and Life After the Oil Crash. I would encourage you, Mr. Speaker, to read that if you have not. This is the way he begins his treatise. I almost put it down. I said, This guy has to be a nut to say this. This is what he said. I did not put

it down. I am glad I did not put it down. I read it through. When I finished reading it through, I found it very difficult to argue with his premises unless we make a big, big effort in this country and worldwide to avoid what he says will happen. This is how he begins this article:

''Dear Reader,

''Civilization as we know it is coming to an end soon.''

That is enough to grab your attention or to convince you that, gee, this guy is a nut, I don't need to read that.

''This is not the wacky proclamation of a doomsday cult, apocalypse Bible prophecy sect, or conspiracy theory society. Rather, it is the scientific conclusion of the best-paid, most widely respected geologists, physicists and investment bankers in the world. These are rational, professional, conservative individuals who are absolutely terrified by a phenomenon known as global peak oil.''

If this is true, Mr. Speaker, why have you not been hearing about this? That is a very reasonable question to ask. There is an aversion to bringing bad news. As a matter of fact, in ancient Greece, the bearer of bad news frequently paid with his life for the fact that he brought bad news, and politicians frequently pay with their seat for the bad news they bring the people. And since this was a problem where the sky probably was not going to fall on my term, let's let the next guy deal with it.

We have in our country the tyranny of the urgent. In the business world, they always deal with what is urgent. In dealing with the urgent, you may put off the important. The urgent thing for a business is to have a good quarterly report. If you do not have a good quarterly report, your stock is going to drop, the board of directors may meet, and you may not have your job. So you need to have a good quarterly report. Looking down the road to make the kind of investments that you need to make in the event that Hubbert and, by the way, I really need to emphasize something. M. King Hubbert was dead right, right on, for the United States. He predicted it precisely. Why should he not be right for the world? In 1973, he predicted that the world would peak in oil production about the turn of the millennium. It occurred a little bit later because he could not have anticipated the Arab oil embargo and its consequences or the oil price spike hikes or the worldwide recession that occurred most largely because of the price of energy. So now we got about another 5 years. Somebody should have noticed that M. King Hubbert was right about the United States, and if he was right about the United States, maybe he could be right about the world. And if he could be right about the world, then should we not be doing something about the situation in the world?

I was privileged to have lunch today with, I think, the largest energy investment banker in the world, Matthew Simmons, adviser of the President, widely known by many people in both the economic area and in the oil area.

''Simmons is a self-described lifelong Republican. His investment bank, Simmons & Company International, is considered the most reputable and reliable energy investment bank in the world.

''Given Simmons' background, what he has to say about the situation is truly terrifying. For instance, in an August 2003 interview with From the Wilderness publisher Michael Ruppert, Simmons was asked if it was time for peak oil to become part of the public policy debate and this was his answer:

'' 'It is past time. As I have said, the experts and politicians have no plan B to fall back on. If energy peaks,' '' and I think, and he believes, that energy has peaked or will imminently peak. As a matter of fact, he has a book coming out on the 15th. I hope it will be a best seller. It is called Twilight in the Desert. It is a book about Saudi Arabia. He believes, and there is pretty good evidence, that Saudi Arabia has now peaked in its oil production. The oil prince from Saudi Arabia was a week or two here visiting the President, you may remember. The President was very anxious to extract the promise that Saudi Arabia would pump more oil because $50 a barrel oil and $2.25 for a gallon of gasoline is not good for our economy. So it would be nice to have more oil which would bring the price down and would help our economy. You may have noted that the oil prince did not, I think he could not, promise the President that he would increase oil production.

'' 'It is past time. As I have said, the experts and politicians have no plan B to fall back on. If energy peaks, particularly while 5 of the world's 6.5 billion people have little or no use of modern energy, it will be a tremendous jolt to our economic well-being and to our health, greater than anyone could ever imagine.'

''When asked if there is a solution to the impending crisis, Simmons responded:

'' 'I don't think there is one. The solution is to pray. Under the best of circumstances, if all prayers are answered, there will be no crisis for maybe 2 years. After that, it's a certainty.' ''

I hope he is wrong. I hope that we in the United States and we in the world recognize the impending crisis as our demand for oil goes ever up and as the oil available to us peaks. Are we here? Are we here? Where are we? We are somewhere near there. There are a lot of experts who agree that we are somewhere near that. And then it starts down the other side. There is this big difference between what we would like to use and what is available to use, and I have already made the point that if we use all the oil for our routine economic functions that is available to us, there will be no energy to invest in the alternatives that we are going to have to have if we are going to transition from the age of oil to the age of renewables. Ultimately, we are going to have to make that transition.

Another expert, Lundberg. You have all heard of the Lundberg report on the price of gas. This is Jan Lundberg:

''The scenario I foresee is that market-based panic will, within a few days, drive prices up skyward.''

That has not happened. But who knows when it may happen, when there is suddenly a realization that we are not going to be able to increase the production rate of oil.

''And as supplies can no longer slake daily world demand of over 80 million barrels a day,'' it is now 84, ''the market will become paralyzed at prices too high for the wheels of commerce and even daily living in advanced societies. There may be an event that appears to trigger this final energy crash, but the overall cause will be the huge consumption on a finite planet.

''The trucks will no longer pull into Wal-Mart or Safeway or other food stores. The freighters bringing packaged techno-toys and whatnot from China will have no fuel. There will be fuel in many places, but hoarding and uncertainty will trigger outages, violence and chaos. For only a short time will the police and military be able to maintain order, if at all.''

I think we all know how thin the veneer of civilization is. Just let the lights go out in any of our major cities for a relatively short period of time and you get some idea of how thin the skin, the veneer of civilization is. I hope he is wrong. But after you read Matt Savinar's, and this is in Matt Savinar's article, after you read that whole article, you will find it difficult as I did, Mr. Speaker, to dismiss that with a wave of a hand, because if it is true that this is the reality, and it was for the United States, why should it not be true for the world? It was true for England. They peaked. Several countries have now peaked. It will be true for the world one day. Everybody admits that. The only difference of opinion is when it will occur. Many believe that we are now at peak or very close to peak oil. These predictions, I think, are made on the assumption that there will not be an adequate response.

One of the reasons I am here today, Mr. Speaker, is hoping that we can educate the American people, the people of the world, to this pending problem. By the way, another example of this tyranny of the urgent; in politics, it is very difficult to see beyond the next election. What political people tend to do are the things that will maximize their vote total at the next election, and talking about peak oil is probably not one of those things to make people feel good about their future. But I think that leadership has a responsibility. I want future generations when they look back on my generation to say, Gee, they did the right thing.

Another observer, Dr. Ted Trainer. By the way, we cannot see beyond the next election very far. Somebody in America, do you not think, Mr. Speaker, needs to be looking down the road?

□ 1730

Who is that going to be if not the elected representatives of the people? And I think the people out there across this great country, Mr. Speaker, are wise enough that they will accept the truth. We are an enormously innovative and creative country. I think that we can get by this. I think that we can have very high-quality lives using much less energy, and I think that we can create a brand-new economy around all of the entrepreneurship, the creativity, the inventions that are going to have to be there when we go from these fossil fuels to renewables.

Dr. Ted Trainer explains in a recent article on the thermodynamic limitations of biomass fuels: ''This is why I do not believe consumer-capitalist society can save itself. Not even its 'intellectual' classes or green leadership give any sign that this society has the wit or the will to even think about the basic situation we are in.''

I hope, Mr. Speaker, as a result of this evening and several prior times I have been here, and I will be here again. I am an old teacher, Mr. Speaker. I taught for 24 years, and I had an adage that I believed in in teaching, and that is that reputation is the soul of learning. And for 12 years I taught nursing students, and not one them failed the board. And I think that is because I had this philosophy that one never can spend too much time making sure that they understand something. So we are going to spend some time at this podium with the American people until we understand this.

''This is why I do not believe consumer-capitalist society can save itself. Not even its 'intellectual' classes or green leadership give any sign that this society has the wit or the will to even think about the basic situation we are in. As the above figures make clear, the situation cannot be solved without huge reduction in the volume of consumption.''

And that is what we have been talking about. If we are here, we would like to use oil at this level. We are going to have to use it at this level so that something remains, so that we can make the investments that we have got to make in renewables, or we are not going to get there.

In the February, 2005, issue of ''Discover'' magazine, Dr. Smalley gave the following diagnosis: ''There will be inflation as billions of people compete for insufficient resources. There will be famine. There will be terrorism and war.''

I hope not. But if we really permit ourselves to get to this point where we would like to have that much oil and there is only that much remaining and we recognize that if we somehow denied oil to some other parts of the world there would be more oil for us, who knows, who knows what we might do?

Mr. Speaker, I have been very fortunate. I have never been placed in a situation where I had to do this, but I am not sure what I would do if the life or the health of my wife and children were at risk. And I think we need to be very careful that we do the things we need to do to create a future environment in which we will not be tempted to do things that under other circumstances we would be embarrassed to even think about.

The chief economist at Morgan Stanley recently predicted that we have a 90 percent chance of facing ''economic Armageddon,'' while stating, ''I fear modern-day central banking is on the brink of systematic failure.'' When somebody like the chief economist at one of the world's biggest banks makes a statement like that, it is not a surprise. Somebody like investment banker and Bush consultant Matt Simmons has stated ''the only solution is to pray.''

There was a recent article in ''Time'' magazine. It was pretty near the center, kind of a center spread. It said: ''Why Gas Won't Get Cheaper,'' and they asked several questions, and then they answered the questions. And in broad terms, they were realistic in their answers. Let me go through some of these because I think it is very instructive. This is a major news medium which has now recognized that we may be getting near this point.

''Is the world running out of oil?'' And the answer is: ''No.'' We have got half of all the oil that was ever there. That is not what is running out. World's oil is not what is running out. What is running out is cheap oil, readily available, and high-quality oil. That is running out. We are not going to run out of oil for a long time, but we have run out or are about to run out of cheap oil, and we are about to run out of our ability to increase oil production.

So their next question is: ''So cheap oil is now just part of history?'' And their answer is: ''Correct.'' Then they go on to explain why.

I was talking to the gentleman from Michigan (Mr. DINGELL) the other day, the longest-serving Member of the House here on this floor, who has served here, I think, over 52 years, and what he told me was we will never see $50-a-barrel oil again. Now, it may dip. Today I think it may be a bit below $50. But what he meant was that oil is really not going down to $25, $30, $40 a barrel again; that it is going to go up from here. That is a recognition that we are probably at this point where demand is going to exceed supply, and when that happens, a little bit of difference, just a dip in supply, and we have seen what happens to prices.

''Will other sources of energy, like wind power or nuclear power, save the day?'' And then they make a very correct statement: ''Only if they replace oil consumption. Building nuclear plants or wind farms to produce electricity, for example, won't add a barrel of oil to the world's supply because we generally don't use oil for electricity.''

In a few moments, we are going to be talking about the real challenges we have in developing these alternatives. It is not impossible, but it is going to challenge the best of us. There is nothing like a challenge to sharpen the intellect or give one the satisfaction of achievement. And, boy, we had better sharpen a lot of intellects, and there is going to be a lot of satisfaction of achievement if we get by this without the rough ride that these authors in this report were making reference to.

''Why is demand for oil rising?'' And then they talk about China and India. We would like our economy to grow. As a matter of fact, if our economy does not grow at least 2 percent a year, we cannot service our debt. And the interest on our debt at today's low interest rates, pray they stay low, is almost as large as all of the money that we spend on the ordinary military. That does not include fighting the war: about $400 billion on the military, about $300 billion interest on the debt. So the interest only has to go up about 30 percent and we are spending as much interest on the debt as we are for our military. These are the big-ticket items.

Demand is rising. It will continue to rise. And if we have reached the peak, then there is going to be a big difference between what we would like to use and what there is available to use and who knows the geopolitical consequences of that? Who knows the stresses and strains in the world that will occur as a result of that and what this or that nation, including our own, by the way, might do?

Next question: ''Will technologies like hybrid cars, which run on a combination of gasoline and electricity, lower the price of oil?'' And they incorrectly answer: ''Eventually, yes.'' I do not think that the author of this understood that we are close to peak oil. No, it is not going to decrease the price of gas. If we have a massive effort at conservation and efficiency, what it is going to do is to permit us to continue to live well while we reduce our oil consumption below this level so we have something to invest in the alternatives.

''Will higher oil prices cripple the U.S. economy?'' And then he makes reference to another article written by Howard Kuntsler, and it is in a book. ''The Long Emergency,'' he calls it. And it goes something like this: ''Gasoline will soon get so expensive that most Americans simply won't be able to afford it. Suburbs, strip malls, interstate highways, the infrastructure of the modern U.S. economy just won't work anymore without cheap oil, and the U.S. will have to reinvent itself or risk falling into decay.'' That is a pretty dire prophecy.

What does ''Time'' magazine say about that? This is what they say. It is

very interesting what they say. That dire prophecy, though, is really all about timing. What they are really saying is if we do not take the right actions at the right time, that could very well happen. That is what they mean. This is all about timing. If we now aggressively pursue a program of conservation and efficiency and developing renewables, we will have a less rough ride through this crisis.

It is really quite lamentable that we have now blown 25 years. We very well knew we were on the downside of Hubbert's Peak in 1980. We should have then begun to make the investments in the alternatives that would make their use a realistic replacement for oil today. Today we have a very steep hill to climb.

I would like to put the next chart up which shows energy density. This gives us some idea of the challenges that we face here as we look to what is going to take the place of gas and oil. And this lists a number of things that we can burn and get energy from and how much energy there is. Domestic refuse, it does not have much. It is wet, and it has got a bunch of stuff in it that will not burn. But many places are burning it to get electricity, and the excess heat can now provide what is called ''district heating.'' By the way, we do not need to be getting rid of this heat in these big cooling towers and evaporating precious water. This heat ought to be used for heating buildings and so forth. They do that all over the rest of the world. We need to do more of that in this country.

Here is brown coal. That is a cheap coal that has a very low energy density. Straw, we are talking about burning biomass, pretty low energy density. If we burn enough straw and soybean stubble and so forth, we can get some energy from it, enough sawdust. Dung, in some countries they are burning dried dung to heat themselves. We used to do that out in the West. Cow chips, I think they called them. Buffalo chips. They picked them up and burned them there.

Wood, 16.2 gigajoules per ton. Black coal, better than wood, 50 percent better than wood. Coke, even better. Ethanol, notice that the ethanol that we would like to have more of because it replaces gasoline has nowhere near the energy density of gasoline because here is petrol down here at 46 and ethanol has less. But, nevertheless, we will talk in a few minutes about ethanol. It is still a really good idea.

Crude oil; diesel; petrol, automotive petrol; naptha; aviation fuel, higher octane, more energy; and natural gas, more hydrogen and still more energy.

I would like to give just a little anecdotal illustration of how important energy density is. One barrel, which is 42 gallons, of crude oil has the energy equivalent of 25,000 manhours of effort. From 8 years with IBM and writing a lot of proposals, I know that 2,060 is a man-year. So this is about 12 man-years of effort. What that means is that for $100, about $50 for the oil and maybe $50 to refine it and transport it to something a gallon for gasoline times 40 is about $100. For $100 one can now buy the energy equivalent worth of 12 men, or women, 12 people working for them all year long, and they bought that for $100. That is the challenge—we have to find something that cheap. And one will say $50 a barrel is not cheap, that $2.25 a gallon for gas is not cheap. But gas is still cheaper than water in the grocery store, is it not? The challenge is to find something with that kind of energy density.

Let me give another little illustration that people may be able to identify with because almost all of us drive cars. We drive a Prius, since 2000. A few weeks ago we had four people, and we were going down into West Virginia, up some mountains down there. We got lousy mileage going up the mountain. We have instantaneous mileage on the Prius so we could see what we were getting. And our mileage was only 20 miles per gallon. But I thought about that. One gallon of gasoline. Members know how big it is. A gallon of milk in the grocery store. One gallon of gasoline took four people and their luggage up a West Virginia mountain for 20 miles. And I thought, Mr. Speaker, how long would it take me to pull my Prius up 20 miles a West Virginia mountain? Now, obviously I cannot pull it up. I am not strong enough. But I can get it up there with some mechanical advantage like a winch that is built into the little thing we call a ''come-along'' and hook it to the guardrail or trees and by and by, if I did it in 90 days, and one can calculate out how far they would have to pull the car in a day, they would be pretty good if they got it up that 20 miles of mountain in 90 days.

□ 1745

That is the equivalent of the 20 years of effort from a single 20,000 man-hours of effort, about 24 years of man work that you get from one barrel of oil. So we have a big challenge in getting a replacement that has the energy density.

I would like to look at one possible replacement, and that is coal. We have a lot of coal. You hear 500 years. That is not true, but we have about 250 years of coal at present use rates, about 250 years at current use rates. That is no growth.

Remember those exponential curves that we looked at a while ago? Just 1.1 percent growth, and that comes down to 125 years. Two percent growth, the curves we have been looking at, we are down to under 100 years. But you cannot put a trunk load of coal in your car and go up the mountain. You have to convert it into something where you can use it, so it is going to take some energy to convert it. It has to be a liquid or gas, and you can make both.

When I was a little boy, the things we burned in the lamps, we had no electricity when I was a child, and we burned coal oil. I kept calling it coal oil for a long time. That was a big improvement over whale oil, by the way, which is what we had before coal oil.

It was called coal oil because we made it from coal. But then we were able to make kerosene from oil, and that was cheaper and easier to make, so nobody used coal oil any more. We may be back using coal oil. After conversion with a 2 percent growth it lasts just about 50 years.

We really need to use oil. It is dirty, big environmental challenges, got to get the sulfur out of it. But still there is energy there and we need to use that energy. But coal, we have to be careful now. These are resources that are finite. When they are gone, they are gone. So we need to plan a future in which we use coal and all of the other of these finite resources in the wisest possible way.

The next chart I want to look at something that is really very revealing. There is a lot of talk about ethanol and ethanol could replace gasoline. Well, yes and no.

Here we have petroleum. You start out with petroleum and you end up down here with 1 million Btus of gasoline at the refueling station. This is all the energy inputs you have to put into the several stages in going from recovery, to transportation, to the refining facility and then transporting it to where you pick it up at the station. So you get 1 million Btus out of the gasoline, but you had to use 1.23 million Btus of fossil fuel to get there, because you have got to expend energy all along this transportation and conversion route.

Now, if we look at ethanol, and we end up with the same thing, 1 million Btus of ethanol, it is going to be a bigger volume, by the way. You remember the energy density? Ethanol has a lower energy density than gasoline. But we made them equivalent here because we are talking about 1 million Btus, so we can compare them, we are comparing apples to apples here.

Now we start with solar energy, and that is going to make the corn grow that we plant, and these are all the things that go into corn. We are going to look at that in a moment. That is really interesting. Then we have to transport the corn, and we have to produce the ethanol, we have to transport the ethanol to where we are going to use it.

But notice that for every 1 million Btus of ethanol we have at the pump, we have put in about three-fourths of a million Btus of fossil fuel to get there. Obviously you would not have to use the fossil fuel, you could use corn energy, ethanol energy, but that is going to further depreciate your yield here, is it not? Tonight, 20 percent of the world will go to bed hungry, and so our limits to transmute food into energy are obviously going to be limited if we would like to continue to feed the world.

What is on the bottom here in this little pie is really interesting. This is the energy that goes in to producing a bushel of corn. It could be a bushel of

soybeans or a bushel of wheat. With soybeans, by the way, you need less nitrogen here because they are a legume and they have little nodules on their roots and they get nitrogen from the atmosphere. But this is corn. It is going to be typical of wheat and rice.

Nearly half of all the energy that goes into producing corn comes from nitrogen, and nitrogen today comes almost exclusively from natural gas.

Mr. Speaker, before we knew how to get nitrogen from natural gas, we only got it in three places, nitrogen fertilizer. We got it from barnyard manures, and they were pretty limited. The farmer might have a good garden if he concentrated his manures on the garden. But for his fields he had to rely on what we called rotation farming. You planted grass and legumes, the legumes fixed nitrogen and put it in the soil, and after several years you plowed up the sod and you planted corn for one year. That sucked most of the nitrogen out of the ground, so you were back in grass and legumes again until you stored enough nitrogen to get another corn crop.

Today we use natural gas to get nitrogen and without natural gas to get nitrogen, I will let you, Mr. Speaker, draw your own conclusions as to how difficult it would be to feed the world, because you see the enormous amount of energy that comes in through natural gas and nitrogen.

Then there is hauling, that is oil; purchased water, you probably pump that with maybe some oil and gas for energy. Chemicals. Many of the chemicals that are used in farming come from a petroleum base.

By the way, there is something we have not talked about, Mr. Speaker, very important. There is an enormous petrochemical industry out there. In a very real sense, oil, and particularly gas, are too good to burn. We live in a plastic world, and all of these things, lipstick, all of these things, come from oil. There are other sources, but they are not as convenient and nowhere near as cheap. So many of the chemicals come from oil.

Custom work. His tractor was built with oil. It ran on oil. There is a lot of oil there. Natural gas, that is all fossil fuels. Electricity, that could have been produced with oil or gas. Liquid propane gas to dry the corn probably. Then gasoline itself, diesel.

We are not even free of the need for oil when you come to lime and phosphate and potash, these nutrients you have to put on the soil in addition to your nitrogen to grow the crop, because we had to mine those, and haul those. We needed energy for all that, and a great deal of that energy came from oil.

So you can see how much our food, in a very real sense, Mr. Speaker, the food you eat is oil. And in our country, just a word about agriculture in our country. We brag we have the most efficient agriculture in the world. That is because we spend fewer man-hours to produce a ton of this or a bushel of that than perhaps any other country in the world. But we do that because we have these very large tractors that burn a lot of oil.

There is a trade-off here. The fewer man-hours you use, the more energy you are probably going to have to use. So although we have the most efficient agriculture in the world in terms of man-hours of effort needed to produce a crop, we may have close to the most inefficient agriculture in the world in terms of energy in and energy out.

As a matter of fact, the food you eat, which, by the way, each helping traveled an average of 1,500 miles before it got to your plate this evening, the food you eat is quite literally energy because of all of the energy that it took to put in to that food.

The next chart looks at some of the alternatives. We need to come back, Mr. Speaker, and spend more time, because we really need to spend a lot of time on this chart, because if these dire predictions that we read earlier are not going to come true, we have got to pay attention to this chart.

There are finite resources. We mentioned the tar sands and the oil shales. A lot of oil there that is not very good, very expensive to get out. You may spend almost as much energy getting it out as you get out of it, so there is not a big energy profit ratio there.

Then coal, we have talked about coal.

Nuclear, we really need to look at nuclear. There are three forms of nuclear. Fusion is one that will get us home free. I do not think that is very probable. In spite of that, I support all the money, about $300 million a year I think we spend in that sector. Because if we really are able to get fusion, energy, and that is what the sun does, by the way, and most of the energy we use comes from the sun. All of the gas, all of the oil, all of the coal if you believe in a biogenic source, of that, and most people do, came from the sun, which shone a while ago.

Hydropower comes from the sun. The sun lifts water, it falls on the mountain and runs through the turbine and produces power. Direct solar, the wind blows because of differential heating. Ocean energy, differential temperatures in the ocean. Of course, you have some ocean energy from the tides. The only potential source of energy free from the sun is the moon; very diffuse, hard to harvest that.

Fission. Two kinds of fission. We have light water reactors, 20 percent of our electricity. The French produce about 70 to 80 percent of their electricity with nuclear and they have breeder reactors.

At another time, Mr. Speaker, we need to talk about breeder reactors. If we are going to get serious about nuclear, we are going to have to go to breeder reactors, because there is not much fissionable uranium in the world. If we all need to go to nuclear it will run out quicker than coal, quicker than oil, quicker than gas. So we need to talk about breeder reactors.

Well, we will come to the floor another hour and spend most of that time talking about these renewable sources. I hope to have with me then, we had five people here last evening, this is a getaway day, they have gone home. The next time it will not be, and we will have a number of people here, and we will have a good time talking about all of these renewables, the challenges and the opportunities there.

CORRECTION TO THE CONGRESSIONAL RECORD OF MAY 11, 2005, AT PAGE H3197

By Mr. HENSARLING (for himself, Mr. RYAN of Wisconsin, Mr. CHOCOLA, Mr. COX, Mr. AKIN, Mr. BARRETT of South Carolina, Mr. BARTLETT of Maryland, Mr. BEAUPREZ, Mr. BISHOP of Utah, Mrs. BLACKBURN, Mr. BRADY of Texas, Mr. BURGESS, Mr. BURTON of Indiana, Mr. CANNON, Mr. CARTER, Mr. CHABOT, Mr. COLE of Oklahoma, Mrs. CUBIN, Mr. MARIO DIAZ-BALART of Florida, Mr. ENGLISH of Pennsylvania, Mr. FEENEY, Mr. FLAKE, Ms. FOXX, Mr. FRANKS of Arizona, Mr. GARRETT of New Jersey, Mr. GINGREY, Mr. GOHMERT, Mr. GOODE, Mr. GUTKNECHT, Ms. HART, Mr. HERGER, Mr. HOEKSTRA, Mr. HOSTETTLER, Mr. JINDAL, Mr. SAM JOHNSON of Texas, Mr. JONES of North Carolina, Mr. KING of Iowa, Mr. KLINE, Mr. MACK, Mr. MCHENRY, Mr. MILLER of Florida, Mrs. MUSGRAVE, Mrs. MYRICK, Mr. NEUGEBAUER, Mr. NORWOOD, Mr. OTTER, Mr. PENCE, Mr. RADANOVICH, Mr. ROHRABACHER, Mr. ROYCE, Mr. RYUN of Kansas, Mr. SESSIONS, Mr. SHADEGG, Mr. SOUDER, Mr. TANCREDO, Mr. TURNER, Mr. WESTMORELAND, Mr. HAYWORTH, and Mr. BACHUS):

H.R. 2290. A bill to reform Federal budget procedures, to impose spending safeguards, to combat waste, fraud, and abuse, to account for accurate Government agency costs, and for other purposes; to the Committee on the Budget, for a period ending not later than July 11, 2005, and in addition to the Committees on Rules, Ways and Means, Appropriations, and Government Reform, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned.

LEAVE OF ABSENCE

By unanimous consent, leave of absence was granted to:

Mr. BERMAN (at the request of Ms. PELOSI) for today on account of official business.

Ms. SOLIS (at the request of Ms. PELOSI) for today on account of official business.

Mr. HONDA (at the request of Ms. PELOSI) for today after 1:00 p.m.

Mr. BECERRA (at the request of Ms. PELOSI) for today on account of official business.

SPECIAL ORDERS GRANTED

By unanimous consent, permission to address the House, following the legislative program and any special orders heretofore entered, was granted to: